

WHAT IS CLAIMED IS

1. A method of manufacturing an electron source,
comprising:

5 a step of forming, on a substrate, a plurality of row wirings, a plurality of column wirings, and a plurality of pairs of conductive films arranged in a matrix by the pluralities of row and column wirings, each pair of conductive films being formed through a gap;

10 a first voltage application step of selecting a row wiring among the plurality of row wirings in the presence of an activation substance source, and applying a substantially same constant voltage to each of a plurality of pairs of conductive films connected to the selected row wiring; and

15 a second voltage application step of applying a predetermined voltage to at least specific pairs of conductive films among a plurality of pairs of conductive films connected to unselected row wirings.

20 2. A method of manufacturing an electron source,
comprising:

25 a step of forming, on a substrate, a plurality of row wirings, a plurality of column wirings, and a plurality of pairs of conductive films arranged in a matrix by the pluralities of row and column wirings, each pair of conductive films being formed through a gap;

a first voltage application step of selecting a row wiring among the plurality of row wirings in the presence of an activation substance source, and applying, to the plurality of column wirings, a voltage set to compensate
5 for influence of a voltage drop caused by the selected row wiring; and

a second voltage application step of applying a predetermined voltage to at least specific pairs of conductive films among a plurality of pairs of conductive
10 films connected to unselected row wirings.

3. A method of manufacturing an electron source, comprising:

a step of forming, on a substrate, a plurality of row
15 wirings, a plurality of column wirings, and a plurality of conductive films each having an electron-emitting portion that are arranged in a matrix by the pluralities of row and column wirings;

a first voltage application step of selecting a row
20 wiring among the plurality of row wirings in the presence of an activation substance source, and applying a substantially same constant voltage to each of a plurality of pairs of conductive films connected to the selected row wiring; and

25 a second voltage application step of applying a predetermined voltage to at least specific pairs of

conductive films among a plurality of pairs of conductive films connected to unselected row wirings.

4. A method of manufacturing an electron source,
5 comprising:

a step of forming, on a substrate, a plurality of row wirings, a plurality of column wirings, and a plurality of conductive films each having an electron-emitting portion that are arranged in a matrix by the pluralities of row and
10 column wirings;

a first voltage application step of selecting a row wiring among the plurality of row wirings in the presence of an activation substance source, and applying, to the plurality of column wirings, a voltage set to compensate
15 for influence of a voltage drop caused by the selected row wiring; and

a second voltage application step of applying a predetermined voltage to at least specific pairs of conductive films among a plurality of pairs of conductive
20 films connected to unselected row wirings.

5. The method according to claim 1, further comprising a step of detecting currents flowing through the column wirings.

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6. The method according to claim 5, wherein the step of

detecting currents comprises a step of detecting currents flowing through the column wirings in said first voltage application step.

5 7. The method according to claim 1, further comprising a step of detecting currents flowing through the row wirings and the column wirings.

10 8. The method according to claim 7, wherein the step of detecting currents comprises a step of detecting currents flowing through the row wirings and the column wirings in said first voltage application step.

15 9. The method according to claim 1, wherein the activation substance source contains a substance which is deposited on the conductive film to increase an emission current.

20 10. The method according to claim 1, wherein the activation substance source is a carbon compound.

25 11. The method according to claim 1, wherein said first voltage application step comprises sequentially selecting each of the plurality of row wirings and applying the voltage.

12. The method according to claim 1, wherein said second voltage application step comprises applying a voltage to all the plurality of pairs of conductive films connected to the unselected row wirings.

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13. A method of manufacturing an image display apparatus having an electron source having, on a substrate, a plurality of row wirings, a plurality of column wirings, and a plurality of electron-emitting devices arranged in
10 a matrix by the pluralities of row and column wirings, and a fluorescent film irradiated with electrons from the electron source,

wherein the electron source is manufactured by the method defined in claim 1.